

JOB INVOLVEMENT OF MALE AND FEMALE

GRADUATE ENGINEERS

IN SOUTH AFRICA

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A dissertation submitted to the Faculty of Social Sciences and Humanities at the University of Cape Town, in partial fulfilment of the requirements for the degree of Master of Arts, in Industrial and Organisational Psychology.

December 1988

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ACKNOWLEDGEMENTS

I would like to acknowledge the following people:

Firstly, the participants in this study, male and female, who thought the issue was sufficiently important to give of their time and contribution.

Secondly, Professor Adre Boshoff, at the University of Pretoria, for his invaluable help and support, in particular with the statistical analyses. Also, my supervisor, Dr Rita Kellerman for her input.

Thirdly, my friends and colleagues for their patience and support during the process of writing this thesis. In particular to Wendy Lambourne, for her never-failing support, encouragement, contribution and input, not only for this work, but also to my development as a person.

Fourthly, my brother and sister-in-law, Peter and Sue, who although they are so far away, have nonetheless demonstrated their care, understanding and support during this time.

Finally, my late parents, for all the precious things they gave me, that I only now can appreciate.

A B S T R A C T

The study investigated the job involvement of a sample of 125 graduate engineers in South Africa. In particular, whether gender differences existed in the level of job involvement, as well as in the factors influencing job involvement (N = 68 males; N = 57 females). The specific factors investigated were biographic variables and career anchors.

The method used was the analytical survey method; three questionnaires were administered. These were: the Lodahl and Kejner (1965) Job Involvement Scale, Schein's (1982) Career Anchor Inventory and a biographic questionnaire. Questionnaires were sent to all female engineers who are registered with one of the professional engineering institutes, while the male sample was drawn from a variety of sources.

Intercorrelation coefficients were calculated for all variables. Analyses of variance were performed to test for significant differences amongst male and females with respect to the variables and relationships measured and a stepwise multiple regression analysis was performed to identify predictors of job involvement by career anchors.

No gender differences in level of job involvement were found. However, significant gender differences were found in the relative strength of four out of the nine career anchors measured.

Social conditioning and expectations were proposed as the reasons for this. Further, significant differences were found with respect to the degree to which career anchors are related to job involvement for males and females. Contrary to conventional wisdom, being married and having children did not affect the job involvement of female engineers, while married men were more job involved than unmarried men.

The study did not contribute greatly to the understanding of the dynamics of female job involvement, inasmuch as career anchors were found to explain only 8,8% of the variance in job involvement scores. In contrast, career anchors were found to be significant predictors of job involvement for males. (38,8% of the variance explained).

Implications of the results are discussed in terms of the alleviation of the skills shortage and organisational strategies such as the development of technical or specialist career ladders, job design and career counselling and career management skills for both males and females, are proposed.

Further areas for research, especially into the dynamics of female job involvement, are suggested.

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CHAPTER 1

INTRODUCTION

The basic reason for academic and practical interest in job involvement has been well expressed by McKelvey and Sekaran, that it has a "pivotal role in providing a link between productivity on the one hand and employee needs and the quality of work life on the other" (1977, p. 281). Similarly, in terms of Schein's model of the matching of organisational and individual needs, individual job involvement can be thought of as a moderating variable within the process whereby the individual and the organisation "are brought together into, ideally, a mutually profitable relationship" (1978, p. 5).

Thus the value of being able to predict what kind of person is likely to be job-involved, and under what circumstances, can be seen from both an organisational, as well as an individual perspective. As regards the organisational perspective, a better understanding of the nature and dynamics of people's job involvement can assist in improving human resource strategy in areas such as selection, job design, compensation, management style, career development and organisation development. As far as the individual perspective is concerned, greater self-awareness of the factors affecting one's involvement in one's job can enhance the quality of one's working life.

There is a macro perspective on this issue too; when one considers the money invested at a national level in education, in

particular at a tertiary level, in preparing people for a career, lack of subsequent job involvement by university educated people constitutes an energy loss in the education system that should be minimized.

The concept of energy loss is particularly germane to the present study, concerned as it is with job involvement amongst a sample of male and female engineers in South Africa. Despite empirical research showing that differences in level of job involvement are not associated with gender differences, stereotypes concerning working women and their job involvement abound. If, as the stereotype suggests, women are **a priori** less involved in their jobs than their male counterparts, then the argument that training and education efforts at national and organisational level are to that extent wasted, is lent some credence.

If, on the other hand, **a priori** differences are not found, then explanations for the low representation of women in professional and managerial categories need to be sought elsewhere. Then appropriate national and organisational strategies for maximizing return on the development of people can be devised.

Conceptual Framework

Different conceptualisations of the construct job involvement have been appearing in the literature since the 1940's: For example, Allport (1943) defined job involvement as the degree to

which an employee is participating in his or her job. It was not until 1965, however, and the pioneering work of Lodahl and Kejner (1965), that attention was paid to the operationalisation and measurement of the construct in its own right.

The concept of job involvement falls within the broad area of worker commitment. Since 1956, over 25 concepts/measures related to worker commitment have been generated (Morrow & McElroy, 1986). These have encompassed a broad range of ideas including:

- * Protestant work ethic
- * Career salience
- * Job involvement
- * Work as a central life interest
- * Organisational commitment

In a study that attempted to identify the redundancy amongst the various measures described above, Morrow and McElroy (1986) found that Protestant work ethic and organisational commitment are independent forms of worker commitment. Job involvement, career salience and work as a central life interest are on the other hand "marked by a fair degree of redundancy" (p. 141), or in factor analytic terms, these constructs load on the same factors.

This finding lead Morrow and McElroy (1986) to suggest three independent foci within the broad area of work commitment. These

are, feelings about the value of work in general (Protestant work ethic), feelings about the employing organisation (organisational commitment), and feelings about what one is doing (job involvement, career salience and work as a central life interest).

The present study is concerned with the last mentioned form of commitment, and specifically, with job involvement, as opposed to career salience. Although Morrow and McElroy (1986) found a significant degree of overlap between the job involvement and career salience, there is conceptually at least, a difference between the two that future empirical research has yet to dimension. It is not the purpose of the present study to further investigate this question; the view taken here is that job involvement is an aspect or component of the broader concept of career salience or commitment. In other words, that job involvement is a necessary, but not sufficient condition for career salience or commitment.

In an attempt to gain a better understanding of job involvement, the present study utilized Schein's (1985) concept of career anchors. According to him, a career anchor is a person's occupational self-image, what he or she is good at, what he or she needs and values. Career anchors are therefore useful in understanding the career choices that an individual makes, and their general approach to work and a career. The specific question that the present study will attempt to address is the extent to which career anchors predict job involvement for male and female engineers.

The Aim of the Study

The aim of the study can be stated as follows:

To investigate the relationships between a range of variables and job involvement for a sample of male and female graduate engineers. The variables investigated were biographic variables (age, marital status, children, language, years of experience) and career anchors.

The Delimitations

Only certain variables were measured; clearly, job involvement can be affected by others that were neither measured nor controlled for. The research should therefore be seen as exploratory, rather than definitive in nature.

The sample was one of convenience and the results obtained are therefore valid only in respect of this particular sample. Thus, not only can the results not be generalised to people in other occupational types and levels, but also, they cannot be considered necessarily valid for all graduate engineers in South Africa.

The study was cross-sectional in nature and therefore does not give any indication of how job involvement changes over time for any one individual. In the light of changing social norms

concerning working and professional women, this aspect would be of particular relevance for further research.

Linked to the above point, the study measured job involvement, which is a point in time measure. No measures of career commitment over time were made and subjects were not asked to project forwards or backwards in time as to past or possible future job involvement.

Finally, the study was concerned with the **application** of the constructs of job involvement and career anchors, rather than with their delineation, definition and measurement. As will be seen in the literature review, gaps exist in our knowledge of the precise definition and measurement of these constructs. To the extent that these affect the valid measurement of constructs, the results from the present study should be treated with caution.

The Importance of the Study

The problem of the effective utilisation of scarce manpower resources in a country where there is a chronic shortage of management and professional resources is well known. In South Africa, the size and shape of the problem has been described by a number of academics and demographers alike. For example, Human (in press) has stated that in the year 2000, "there will be a deficit of 103 000 persons in the executive and managerial group and a deficit of 442 000 persons in the professional, technical

and highly-skilled group". More specifically regarding engineers, and from a shorter term perspective, government manpower surveys indicate that as at April 1987 there were 1 183 actual vacancies for professionally qualified engineers; that is, jobs that could be filled immediately if there were candidates available. (Central Statistical Service, 1987).

A conservative projection just twelve months into the future, to April 1988, indicated that the shortage would have increased to 1 288. It is important for the context of the present study to bear in mind that engineering is not only a key profession in its own right, but is important because it is frequently a means of entry into management positions (Schneider, 1977). Thus men and women engineers, especially those in the early and mid-career stage, can be seen as potential managers.

It follows therefore, that the identification and study of the issues related to the job involvement of this population has significance for the issue concerning the supply of the skills needed for the future development of the country.

There are two aspects to this issue:

- * The question of the number of resources available;
- * The utilisation of these to the mutual advantage of the individuals and their employers.

As regards the supply of engineers in South Africa, the traditional source is that of White males. In 1983, there were 118 graduate female engineers in the country. By 1987, that figure had risen to 318 (Central Statistical Service, 1983; 1987).

In percentage terms, this represents an increase of 269%, but from a low base. The absolute numbers are low when compared to male engineers, of whom there were 19 882 in 1983 and 21 101 in 1987. In 1983, the ratio of female to male engineers was ,59 to 100, while by 1987, this ratio had risen to 1,51 to 100. (Central Statistical Service, 1983; 1987). Again, although the relative number of female to male engineers has increased significantly, the ratio remains very low. This tends to suggest the need to attract and retain females in the engineering profession at an increased rate if the national deficit in professional and managerial staff is to be alleviated.

As far as the utilisation of engineers is concerned, clearly, lack of job involvement by individuals leads to less-than-optimal utilisation of scarce skills. It therefore becomes important to identify the level and dynamics of the job involvement of this population. Also, given the need to expand the source to include more females, it is particularly important to ascertain whether male/female differences exist.

The assumption that females are *a priori* less job involved than their male counterparts was mentioned earlier in this

chapter. The implications of this assumption are far reaching in terms of their negative effects on the provision of the appropriate number and quality of skilled resources in the country, as well as on the nature and culture of organisations that are needed in a changing environment.

On the basis of personal observation, it appears that the implications of this assumption include:

- * Lack of investment by organisations in the training and subsequent development of female engineers in the workplace.
- * A waste of individual and national effort in a lengthy and costly university education process.
- * A situation where female engineers actually reinforce this assumption via the operation of the self-fulfilling prophecy.
- * Long term, a lack of potential manpower for the management and entrepreneurial ranks.
- * Also in the long term, the perpetuation of an arguably outmoded and inappropriate paradigm within organisations and by extension, in society as a whole.

The last mentioned point is strongly supported by Human (in press), who stated that the holding of discriminatory and stereotypical attitudes by those in power (in this case, by White males), about those who are not in power (in this case, females and Blacks), has deleterious affects on both the powerful and the powerless. Those in power are rendered less capable of coping with complex and conflict-ridden realities as their world-view is made narrower and distorted by prejudice.

Further, Capra (1982) has argued that the inclusion of so called "Yin" (i.e. female) values of intuition, compassion, nurturing and emotion into organisations that are currently dominated by the "Yang" values of rationality, dominance and short-term goals is essential for the survival of society as a whole.

It seems that aspects of what Capra (1982) is referring to could be achieved once a better understanding of the relative contribution of job involvement is gained. For example, if more women are functioning in organisations in positions of influence and authority, there is reason to suggest that the strength of "female values" would be enhanced. Further, if women were rewarded and encouraged to bring these kind of values to bear in the organisations where they worked, their genuine commitment to and congruence with those organisations would be greater.

In summary, it can be said that unsubstantiated stereotypes and assumptions about working women have circular and self-reinforcing effects. There are negative effects on individuals (both male and female) in organisations and on society as a whole. Further, that these effects are both "hard" i.e. curtailment of the growth of businesses and the economy because of a lack of adequate human resources; and "soft", i.e. the stunting of personal growth of individuals and the stunting of the development of organisational and societal values that bring an enrichment of the quality of life, both within and outside the work-place.

CHAPTER 2

LITERATURE REVIEW

In this chapter, there will first be a short discussion on the definition and measurement of job involvement. The main focus will however be on variables that influence job involvement. Particular attention will be paid to those variables that have been shown to, or that could be presumed to, affect males and females differently. At the end of the chapter, two theoretical models of the job involvement process will be presented.

The Definition and Measurement of Job Involvement

Since the pioneering work by Lodahl and Kejner (1965) a great deal of attention has been paid to the dimensionality of the construct job involvement. Rabinowitz and Hall (1977) described two classes of definitions of job involvement. These were, firstly, job involvement as the degree to which a person perceives that job performance is central to his or her self esteem. The second definition sees job involvement as the degree to which the job is central to the person and his/her identity.

The original study by Lodahl and Kejner (1965) failed to fully address the issue of which of the two definitions they were actually using. These authors developed a 20 item Likert scale to measure job involvement, using a sample of 125 nurses and 70

engineers. As regards their assessment of what exactly their scale was measuring, they concluded that job involvement was multi-dimensional, with at least three dimensions. Subsequent factor analytic studies have found a degree of instability of factors for different samples. For example, Wood (in Blau, 1985) found five factors that were measured by the Lodahl and Kejner (1965) scale. These were:

- * work attraction
- * failure sensitisation
- * work commitment
- * job pre-eminence
- * work identification

While the failure sensitisation factor operationalises the performance self-esteem definition of job involvement, the job pre-eminence and work identification factors reflect the self-image/identification definition.

A number of authors have developed adaptations of the 20 item scale of Lodahl and Kejner (1965), usually in the form of shortened versions. One such adaptation was the 10 item scale by Kanungo (1982). This scale was used in a study by Blau (1985), together with a shortened form of the original Lodahl and Kejner (1965) scale, in an attempt to clarify the dimensionality of job involvement.

The main findings of Blau's (1985) study were: Firstly, that whereas the Kanungo (1982) scale loaded almost entirely on one factor, which Blau (1985) called job involvement, the Lodahl and Kejner scale loaded on two factors, job involvement and intrinsic motivation. The second finding was that, using the Kanungo scale, job involvement seems to be an unidimensional construct that can be operationalised in terms of one's psychological identification with one's work.

The second finding was confirmed by the results of a very recent unpublished South African study by Kaplan and Boshoff (1988) on the job involvement and job satisfaction of people in 14 different professions. In this study, the Kanungo (1982) scale of job involvement was used and a factor analysis was performed to clarify the dimensionality of the construct.

The results confirmed Blau's (1985) finding that job involvement as measured by the Kanungo (1982) scale is an unidimensional construct relating to one's psychological identification with one's work.

Variables influencing Job Involvement

Since 1965, a large body of literature on the variables influencing job involvement has developed. Earlier correlational studies were concerned with identifying personal and job characteristics that were associated with job involvement.

Subsequent studies adopted a less simplistic view and investigated issues such as moderator and interaction effects of personal and job characteristics. Another feature of later studies is the use of multiple regression analysis techniques to explore the dynamics of job involvement.

The focus on either personal characteristics or job characteristics, or the joint effects of both is of conceptual significance for the present study, concerned as it is with gender differences in job involvement. Yammarino and Dubinsky (1988) point out that proponents of the person-centred perspective attribute work-related responses (e.g. job involvement), to factors that are internal to women as compared to men. The situation-centred perspective on the other hand, holds that differences in work-related responses are attributable to factors in the job situation or work environment. This is essentially a social learning perspective. The third alternative perspective is that which suggests that differences in work-related responses are attributable jointly to personal and external factors.

The literature on the variables influencing job involvement will now be reviewed, beginning with studies of personal factors, then job factors and finally those that have investigated joint effects of personal and job factors.

The discussion will culminate in the presentation of two models of job involvement that are particularly relevant to the

present study, namely, McKelvey and Sekaran's (1977) Ego Identity Type Theory of Job Involvement, and Chusmir's (1982) Model of the Job Involvement Process.

Personal Characteristics

In a major review of the job involvement literature, Rabinowitz and Hall (1977) concluded that personal factors and job factors (including both work characteristics and work outcomes) were of equal magnitude as moderators of job involvement.

The personal characteristics that were associated with high level job involvement were:

- * belief in the Protestant Work Ethic
- * age
- * internal locus of control
- * strength of higher order needs.

No relationship was found between gender and job involvement or between marital status and job involvement. This finding that males and females do not differ in job involvement has been supported by a number of later studies on diverse samples. (Graddick & Farr, 1983; Frone & Rice, 1987; Knoop, 1986; Lacy, Bokemeier & Shepard, 1983; Yammarino & Dubinsky, 1988). These studies will be reviewed in more detail later on.

In an extensive study of personality, career and work setting variables affecting the job involvement of 441 engineers and scientists, McKelvey and Sekaran (1977) found that of the four variables most strongly associated with high level job involvement, three were personal characteristics, rather than characteristics of the job, supervisor or organisation. These were **interest in innovation, local versus cosmopolitan orientation and age.**

In a recent study on the relationship of personal factors and job factors on the job involvement of 926 high school teachers, Knoop (1986) found small but significant correlations between job involvement and the following personal factors:

- * marital status (single)
- * education
- * locus of control

Most of Knoop's (1986) findings supported previous research on personal factors, although there were some differences.

Before moving on to discuss work situation influences on job involvement, it is important to address the question of whether personal characteristics relating to females in particular, have been researched and if so, what were the findings.

At the outset it needs to be stated that female job involvement per se does not seem to have been studied extensively. Studies that could be found relate to more global aspects such as career motivation, career choice and attitudes towards work in general.

In 1981, van Rooyen (1981), undertook a study of career commitment amongst female graduates at a research institution in South Africa. The aim of the study was threefold:

- * to identify personality factors affecting women at work and in their career interest
- * to identify environmental variables affecting female career commitment at different life phases
- * to develop a model of female vocational behaviour

The study did not measure career commitment or job involvement directly; instead, subjects' attitudes toward their careers and work in general were assessed via a non-standardised questionnaire. In addition, need for achievement, personality type and sex role identity were measured.

The study found that women with a masculine (masculine and androgynous) sex role identity were significantly more achievement-orientated than their feminine (feminine and

undifferentiated) sex role counterparts, irrespective of age or marital status. The relative value of these findings is however somewhat limited in view of van Rooyen (1981) using only a female sample whereas the methodology utilized clearly demands a sample involving both genders.

The masculine and androgynous group was significantly more interested in a career and in more complex jobs than was the case with the feminine group. A further finding of the study was that interest in work and in developing a career seemed to depend on life stage, life circumstances and personality.

Unfortunately, the significance of the van Rooyen (1981) study for the present one is limited by the fact that although a distinction is drawn between job involvement and career commitment, the latter being seen as going beyond involvement in a current job, to work becoming a central life interest, the whole issue of the operationalisation and measurement of either concept is not addressed. Indeed, an assumption is made that need for achievement is a valid measure of career commitment.

In a study of the job expectations and job rewards of 9 065 graduated women, again in South Africa, Wessels (1982) found that they "overwhelmingly desired to combine marriage, family and a career, rather than choose one or the other" (p. 24). Further, high career-orientated women were found to attach importance to job content (challenge, use of abilities towards personal growth,

recognition, autonomy and authority), while low career-orientated women seemed to value good fringe benefits and pleasant working conditions more.

Another personality aspect which has received much attention is that of "fear of success". The construct was originally proposed in 1968 by Horner, who argued that in competitive achievement situations, success-seeking women of high ability have not only a motive to approach success and avoid failure, but also one to become anxious about being successful. The latter motive arose from the anticipation of negative consequences of succeeding (Horner, 1968, in Paludi & Fankell-Hauser, 1986). Paludi and Fankell-Hauser (1986) reviewed the literature and research on fear of success and concluded that "methodological, statistical and conceptual problems with Horner's technique are abundant" (p. 90).

These authors, using a non-projective technique called biographical interviewing, found that amongst a group of 80 women, few reported fear of success in the face of anticipated success. However, 96% seemed to be questioning the cost of that success. Interestingly, younger women seemed more concerned with interpersonal relationships than with competitive achievement.

This latter finding accords with that of Sheehy (1981), who found that amongst a group of 100 female professional financiers,

overall life satisfaction was more related to relationships and people, than to achievement, although achievement was certainly high.

Work Characteristics

The second class of variables associated with job involvement is work characteristics. Reviews of the literature by Rabinowitz and Hall (1977) and Chusmir (1982) suggest that the following work characteristics are associated with high job involvement:

- * meaningfulness of work
- * utilisation of skills
- * participatory leadership
- * degree of autonomy
- * ability to be creative
- * chance for advancement

Gender differences in the strength or direction of these relationships were not found.

The work outcomes that are associated with high job involvement are job satisfaction and low turnover (Rabinowitz & Hall, 1977).

The Knoop (1986) study referred to earlier, found that people with a high level of job involvement were satisfied with their jobs and the supervision received; participated in decision making; were more motivated; less closely supervised and led by supervisors who were high in consideration and high in initiating structure. In order to determine which of the job and personal factors most strongly influenced job involvement, step-wise regression analyses were then performed with job involvement as the dependent variable and the fourteen personal and job factors as a set of independent variables. The results tended to support the situation-centred perspective described by Yammarino and Dubinsky (1988), since of the four variables that contributed significantly and explained 28% of the variance, all were job, as opposed to personal factors.

Joint Effects of Personal and Work Characteristics

The studies described above did not contribute greatly to the understanding of job involvement. Much of the variance in job involvement is unexplained in studies that report correlations in the order of .30 or .40. (Chusmir, 1982; Knoop, 1986; Rabinowitz & Hall, 1977). This gave rise to more sophisticated studies that have investigated inter alia, additional personal and job factors that are associated with job involvement; moderator and interaction effects of personal and job factors; and the predictive strength of variables using multiple regression analysis techniques.

A good example of a study investigating joint effects of personal and job factors was that by Wagner, Ferris, Fandt and Wayne (1987), who attempted to explain the nature or shape of the relationship between job involvement and organisational tenure. Investigating reasons for the inconsistent results found by previous research into the relationship between these two variables, found that the relationship is non-linear. That is, that the relationship is initially (for the first two years) low, extending upwards toward a peak occurring at a moderate level of organisational tenure (between three to nine years), and remaining relatively high thereafter.

Career Based Factors and Job Involvement

The effects of career-based factors on job involvement have also been investigated. The career factors that have been investigated include career stage and career orientation and a related concept, career anchors. Rabinowitz and Hall (1981) explored the changing nature of the correlates of job involvement over three career stages. In their study, work characteristics were found to be especially important in early career, while personal characteristics were associated with job involvement in mid career. In late career, rewards were associated with job involvement.

Similarly, a study by Lorence and Mortimer (1985) on a sample of 1 455 people designed to be representative of the U.S.

working population, found that a work characteristic - work autonomy - has the strongest influence in early career.

The main focus of the Lorence and Mortimer (1985) study was however, on the stability of job involvement over time. The sample was divided into people in early, mid and late career stage, and job involvement was measured twice, once in 1973 and again in 1977. Job involvement was found to be increasingly more stable over time, which the authors attributed to an increasingly stable work environment.

Although both job involvement and career orientation have generated a large body of research as separate constructs in their own right, the relationship of one to the other does not appear to have been extensively explored.

The link between the two constructs was suggested by McKelvey and Sekaran (1977), in their study of personality, career and work setting variables affecting the job involvement of 441 engineers and scientists. These authors found essentially similar kinds of correlations between a range of variables and job involvement that earlier correlational studies had established. However, on the basis of a finding that with respect to the total sample, a total of 49 variables explained only 38% of the variance in job involvement scores, McKelvey and Sekaran (1977) decided to perform similar analysis on lower-order groupings (for example, non-managers versus managers, engineers

versus scientists, management versus technical orientation). The variance predicted by far fewer variables rose significantly; For example, in one case, 11 variables predicted 51% of the variance.

It is outside the scope of the present study to review the results of the McKelvey and Sekaran (1977) study in depth. What is of significance though, is the conclusion that these authors reached on the basis of their results. This was that it is not enough simply to ask what are the factors generally associated with high job involvement. It is also necessary to ask "what kinds of 'ego identity' and thus what kinds of job involvement various groups of professionals want" (McKelvey & Sekaran, 1977, p. 299). Three aspects of ego identity type are suggested. These are, preferred job type, career orientation type and personality type. For high job involvement to occur, these three aspects need to be compatible and present in the particular work setting. The model is presented as Figure 1.

McKelvey and Sekaran (1977) describe career orientation type as a focus on particular career components or combinations that gives rise to a particular career identity. Whilst neither McKelvey and Sekaran (1977) nor Schein (1978) refer to each other's work on career orientation, clearly Schein's (1978) notion of "career anchor" and McKelvey and Sekaran's notion of "career orientation" are conceptually similar, if not identical. Schein's work is arguably more developed, since he has defined

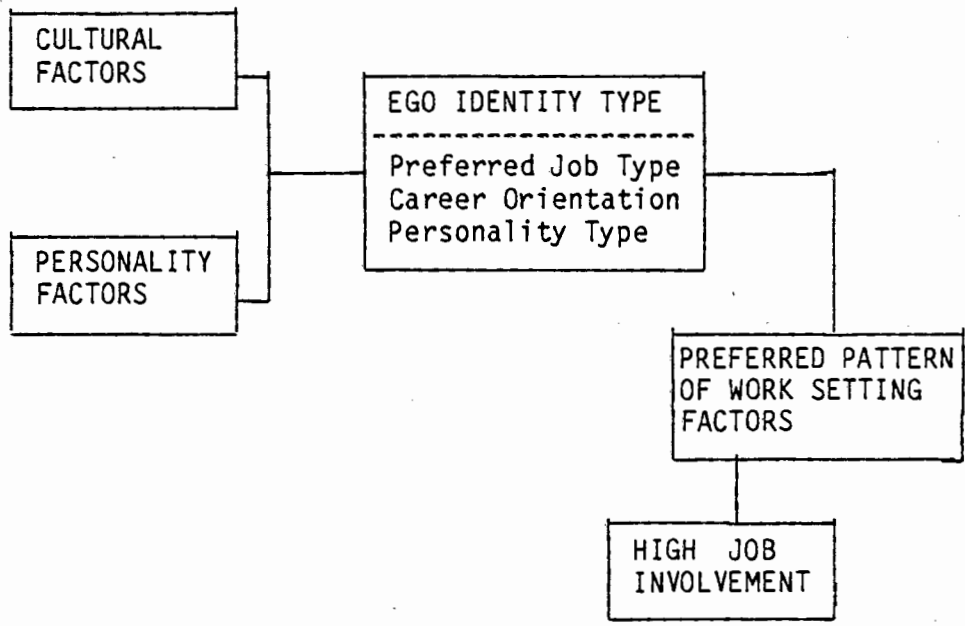


Figure 1 McKelvey and Sekaran's (1977) Ego Identity Type Theory of Job Involvement

more closely his concept of career anchor, proposed a range of possible career anchors and developed an inventory to measure these. His work will now be reviewed in more detail.

According to Schein (1978), the concept of career anchor is broader than the "typical concept of job value or motivation to work" (p. 125), in as much as it comprises three basic components that together, make up a person's occupational self-concept.

These components are:

- * self-perceived talents and abilities
- * self-perceived motives and needs
- * self-perceived attitudes and values.

Career anchors are formed as a result of work experiences primarily during the early career stage. It is important to note that the career anchor is by definition a self-concept and does not necessarily include the individual's actual needs, drives or talents. Its power arises from the fact that self-perceptions guide and constrain a person's present and future career decisions no matter how accurate or inaccurate these self-perceptions are. The notion of the "anchor" relates to a force that pulls a person back to a situation that more closely matches his or her talents, needs and values. In this way the anchor influences career decisions.

Schein's earlier work (1978) identified five career anchors: managerial, technical/functional, security, autonomy, creativity, with a further three as possibilities: identification, service and variety. In a subsequent study, DeLong (1982) investigated the factors measured by a questionnaire designed around the original five anchors plus the additional three proposed by Schein (1978). With a sample of 1 224 male American business school graduates he identified nine factors. These corresponded to the eight career anchors mentioned above, with security breaking down into two separate scales - job security and geographical security. The work of DeLong is reflected in the 1982 version of the Career Anchor Inventory, which is the one utilised in the present study.

The nine career anchors are described individually below:

Managerial competence : this relates to the ability to analyse problems and to remain emotionally stable and interpersonally competent. People with a strong managerial anchor desire to lead others and to rise to a position in general management. A technical job is seen as an interim job, or stepping stone to a management position.

Technical/functional competence : this characterises people who are motivated by the challenge of the actual work they do; in the context of this study, this would obviously be engineering. People with a strong technical/ functional anchor would resist

movement into a general management position; since this is the traditional career path in many organisations a degree of career conflict is likely for people with this anchor.

Entrepreneurship or creativity : this relates to the desire or need to create something entirely of one's own, seeking new ventures or projects. People with a strong creativity anchor need not necessarily desire to function in their own business, although they often find problems operating within large organisations.

Autonomy : as with the previous anchor, this denotes a person who finds organisational life restrictive, although the emphasis here is on the need to be maximally free from constraints to pursue their work. Organisational life is perceived to be restrictive, irrational and intrusive. Unlike the people with a strong technical/functional anchor, these people tend not to experience conflict about missed opportunities for promotion.

Variety : this relates to the desire to have a large number of different types of challenges as opposed to exercising talents in depth. These people are very easily bored.

Identification : identity-orientated people seek careers and organisations with status and prestige. Occupations or jobs with highly visible external symbols such as titles, uniforms, visible fringe benefits are sought after.

Service : this anchor relates to concern with helping others and seeing the difference that their efforts make. Typical professions where this anchor would be exercised are social work and aspects of medicine and teaching.

Security (Tenure) : people with this anchor tend to tie their careers to a particular organisation and to accept, generally speaking, the organisation's definition of their careers. Long-term stability and benefits are important.

Security (Geographical) : this anchor predisposes a person to move from one company to another if necessary, in order to remain in the same geographical area. Family needs may also be important here.

As far as subsequent research on career anchors is concerned, it seems as though the concept has generated surprisingly little research. Schein (1978) himself investigated aspects such as the applicability of career anchors in mid-life; as well as managerial attitudes associated with different career anchors. van Maanen (in Schein, 1978) investigated the applicability of career anchors to police careers.

One study that is interesting in the present context is that by Bailyn (1982), on the career orientations and job satisfaction of a group of 1 351 engineers in mid-life. The results indicated

homogeneity amongst the engineers with respect to what they wanted from the jobs - namely:

- * freedom to be creative and original
- * challenging work
- * opportunity to exercise leadership
- * to enjoy both earnings and advancement.

However, a wide variety of reactions to their careers and level of job satisfaction was found according to current occupational role; For example: entrepreneurs, consultants, managers (general, functional, or engineering), or staff engineers differed in terms of level of job satisfaction. Differences in job satisfaction were also found with respect to "orientation": that is, technical vs people vs non-work orientation.

On the basis of the results, Bailyn (1982) concluded that "there is a significant lack of congruence amongst organisational rewards, career orientation and job satisfaction in engineering based positions at mid career" (p. 43). The author discusses the implications of this for management strategies and practices.

The link between career orientation (or any other aspect of ego identity type for that matter) and job involvement has not been further investigated until a recent South African study by

Boshoff, Kaplan and Kellerman (1988), which investigated the degree to which job involvement and job satisfaction were predicted by career anchor scores in a sample of 1 791 people from 14 different professions.

The rationale for the study arose from Schein's (1985) conceptualisation of career anchors, where a career anchor is defined as "a person's self image of what he or she excels in, wants and values" (Schein, 1985, p. 1). Further, career anchors "help the individual define themes and patterns that should be helpful in understanding a person's approach to work and a career", (Boshoff, Kaplan & Kellerman, 1988).

Several findings of the study by Boshoff, Kaplan and Kellerman (1988) are of significance for the present study. The engineers in the sample had significantly lower scores on the Technical/Functional career anchor than members of all the other thirteen professions in the sample. The scores of the engineers on the Managerial anchor were however, higher than those of eight of the other professions.

The authors used the 1985 version of the Career Orientations Inventory, which includes the Life Style Integration anchor and excludes Identification, when compared with the earlier inventory used in the present study (Schein, 1982). The three strongest career anchors for the engineers were:

- * Life Style Integration
- * Managerial
- * Autonomy

Boshoff, Kaplan and Kellerman (1988) found that the means for these three were significantly different from each other, although the difference between the means for Autonomy (ranked third) and Service (ranked fourth) was not.

A further aspect of the Boshoff, Kaplan and Kellerman (1988) study was to ascertain whether career anchor scores predicted job involvement scores of professional people. Pure Challenge and Technical/ Functional competence were particularly strong predictors, together predicting 23,2% of the variance in job involvement. The engineering profession, however, was outside the pattern of the total sample. Only 15,5% of the variance in job involvement of engineers was predicted by the four career anchor scores that entered the prediction at the level of ,05 (Pure Challenge, Service, Entrepreneurship and Technical/ Functional).

Influences on the Job Involvement of Females

The effects of variables that affect the job involvement of males and females differently have also been studied, with interesting and somewhat inconsistent results. Chusmir (1982) proposed a model of job involvement that specifically included

two variables that he believed affect males and females in different ways. These two variables were family circumstances and sex role conflict. Chusmir's (1982) model of job involvement is shown as Figure 2.

It depicts job involvement as an outcome of a process involving three sets of variables: personal influences, which create a personality profile or mind-set that "places a man or woman on a particular path toward job commitment or rejection" (Chusmir, 1982 p. 598). Once the person actually starts working, this mind-set is influenced by the second set of variables, namely, external moderating factors. These are:

- * family circumstances
- * job circumstances

The third and final stage of the process is referred to as moderated perceptions. According to the model, these perceptions are a product of the interaction between the factors operating in the previous two stages. Chusmir (1982) proposed three major moderating perceptions. These are:

- * sex role conflict
- * satisfaction of needs
- * work commitment

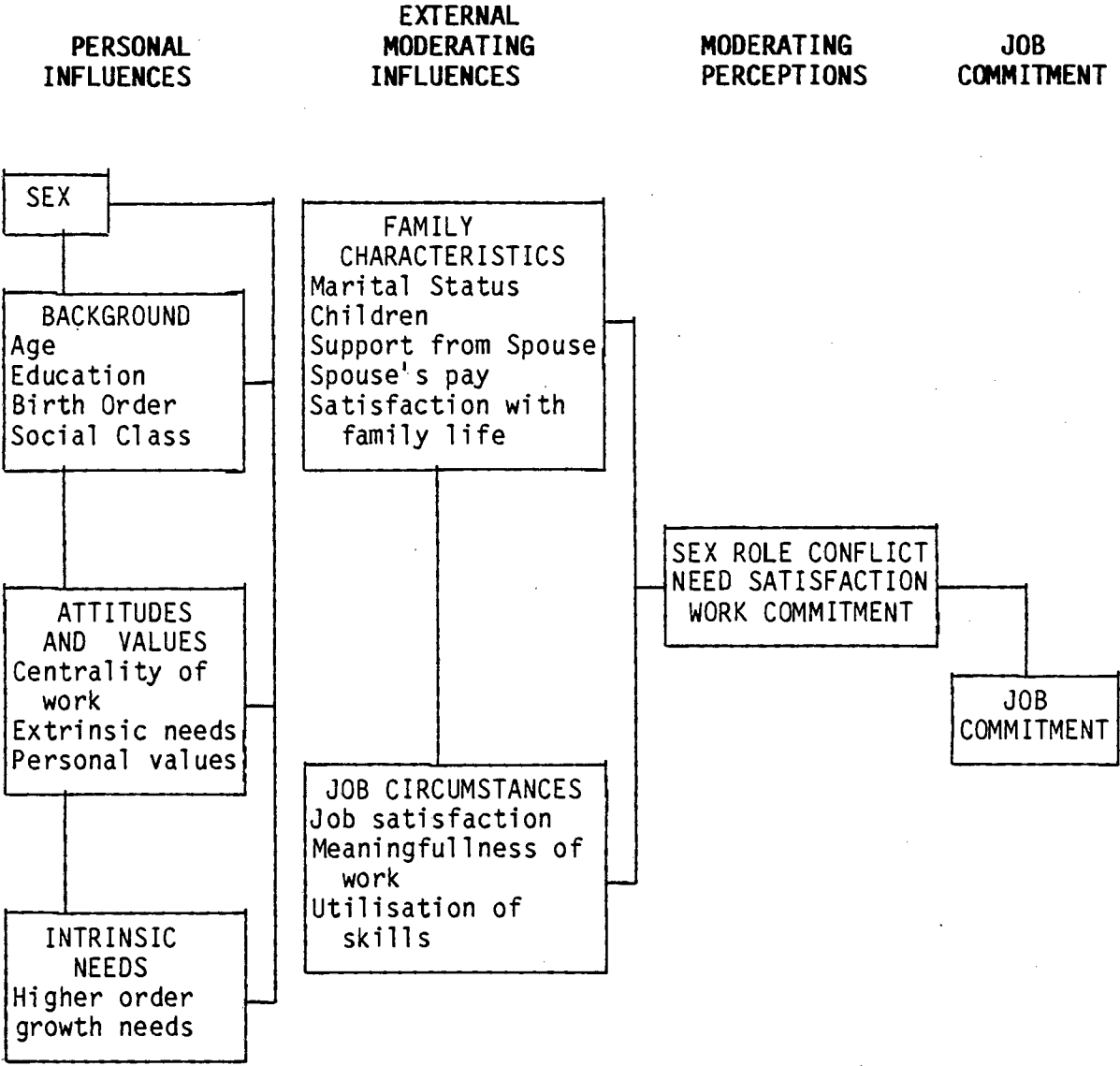


Figure 2 Chusmir's (1982) Model of the Job Commitment Process

The basic premise underlying this model provides the impetus for the present study, although it does not purport to test the model. The premise is : Although being female does not necessarily imply lower job involvement than for males, women are nevertheless subjected to many environmental pressures not experienced by men. This is essentially a social behaviouristic orientation, as it contends that the same degree of job involvement, and associated outcomes such as turnover and absenteeism would be exhibited by males and females alike, given the same situation.

The literature on the variables under personal influences, as well as job circumstances, has already been reviewed in this chapter. Chusmir (1982) himself cites various research studies in support of the contention that need satisfaction and work commitment are related to job involvement. Since the present study is particularly concerned with variables affecting female job involvement, the literature on family circumstances and in particular sex role conflict will now be reviewed in more depth.

As far as the influence of family circumstances on the job involvement of females is concerned, Chusmir (1982) reported that relationships between various aspects of a working woman's family situation and her work commitment in general have been found, but none of these "has been shown to correlate directly with job commitment or job involvement" (p. 599).

According to Chusmir (1982) sex role conflict is a variable that affects the job involvement of women, but not that of men. Particularly affected are married women and working mothers, (as opposed to single women), as well as women with traditional, as opposed to non-traditional views. Chusmir (1982) himself did not test the relationship between sex role conflict and job involvement, although he cited previous research studies that had indicated a strong and negative affect on job involvement by sex role conflict. Subsequent research studies have however, tended to suggest otherwise. The relationship between personal conflict and job involvement was investigated by Graddick and Farr (1983), using a sample of 440 female and 447 male scientists. No significant differences in job involvement (as measured by a shortened version of the Lodahl and Kejner (1965) inventory) were found between males and females. Three measures of personal conflict were taken. These were work versus spouse conflict, work versus family conflict and work versus self conflict.

For two out of the three (that is, work versus family and work versus self), females reported significantly higher levels of conflict than males. These higher levels of conflict experienced by females were not, however, associated with lower job involvement, but rather, with lower commitment to the particular organisation where they worked.

The only significant difference in job involvement between men and women was with respect to the number of children at

home. On the basis of these results, Graddick and Farr (1983) suggest firstly that women still bear the greater burden of both job and family concerns, and secondly, that job involvement may be a natural consequence of the level of investment, in terms of time and energy, made by professionals, irrespective of gender.

In a recent review, Frone and Rice (1987) tested the hypothesis that inconsistent findings may be due not so much to measurement artifacts, as to an over-simplified view of the relationship between job involvement and work-family conflict. They proposed that this relationship is modified by the level of involvement in one's family roles. The sample comprised non-teaching professionals at an American university, 57% were male, 43% were female. Two types of family involvement (spouse and parent) and two types of work-family conflict (job-spouse and job-parent) were assessed.

The results indicated firstly, that gender was unrelated to both job involvement and work-family conflict scores. Secondly, that the level of spouse involvement moderated the relationship between job involvement and job-spouse conflict. However, parental involvement did not have a similar, and predicted affect on the relationship between job involvement and job-parent conflict. That is, both men and women who were highly involved in their jobs experienced job-parent conflict, irrespective of the extent of their involvement with their children.

The authors suggested that this latter finding could be explained by the fact that even minimum standards of parental involvement are sufficiently high to produce inter-role conflict. Further, that the demands of parenting are such that they are difficult to ignore or escape from.

A study by Pietro-monaco, Manis and Frohardt-Lane (1986) found that although the majority amongst a group of 500 employed women reported that their lives were stressful, this was independent of the number of different roles held. Interestingly, higher self-esteem and greater job satisfaction were associated with holding more roles. This is consistent with a view expressed by Baruch, Biener and Barnett (1987) who suggest that "viewing one's work as a career rather than a job is associated with greater work satisfaction and less role conflict" (p. 83). These authors suggest that the work place is an important source of challenge, control, structure, positive feedback, self-esteem and valuable social ties, and that this mitigates against work associated stress. Merikangas (1985), in Baruch, Biener and Barnett, suggests that perhaps "a job is to a woman as a wife is to a man" (1987, p. 132).

In a study of the stressors and high-stress outcomes for a group of 696 female managers in Britain, Davidson and Cooper (1984) identified a range of stressors in the work, home and social and individual arena, faced by women, but not by men.

The kinds of stressors identified for women included demographic factors, job factors, prejudice and stereotyping, career development and work relationships. The outcomes associated with these stressors covered a range of psychosomatic symptoms, as well as work performance effects. Unfortunately, no measures of job involvement were taken, so the effects of the stressors on female job involvement was not determined.

The results of the studies by Frone and Rice (1987), Graddick and Farr (1983), and Pietro-monaco, Manis and Frohardt-Lane (1986) tend to suggest that there are individual differences in choice of response to family circumstances. Further, on the assumption that some degree of role conflict inevitably arises in situations where women combine both family and work, it appears that the affects of this conflict are not necessarily negative and even when negative, are not necessarily manifest in lower job involvement. From the studies reviewed above, it appears that the effects of conflict and stress for women are more likely to be seen in terms of their attitude towards the particular organisation (Graddick & Farr, 1983) and psychosomatic symptoms and work performance deficiencies (Davidson & Cooper, 1984), than in lower job involvement.

Conclusion

By way of a close to this chapter, the gaps in the literature in the area will be discussed.

Although numerous authors cited (McKelvey & Sekaran, 1977); Rabinowitz and Hall (1977) have suggested multivariate studies of job involvement of the **process** of job involvement, these do not appear to have been forthcoming. Further, that the "type" theories as suggested by McKelvey and Sekaran (1977); have not been tested. In particular, the concept of career anchors in relation to job involvement has not been thoroughly investigated.

As far as South African studies are concerned, it does not appear that much recent work on job involvement is available, the study by Boshoff, Kaplan and Kellerman (1988) being a noteworthy exception. There is no South African research investigating gender differences in job involvement. In the light of the increasing numbers of women professionals and managers, an increased understanding of female job involvement, and whether it differs in level or nature from that of males is an important need for further research.

The nature and determinants of job involvement of female professionals is important not only in the context of the maximal utilisation of professionals, but also in the context of potential managers, who are, by and large, drawn from (male and female) professional ranks.

CHAPTER 3

METHODOLOGY

The first section of this chapter will describe the specific research problems that were investigated in terms of the overall research question; thereafter, the design and the procedure will be described, including the instruments that were used. The treatment of the data will be described in the results chapter (Chapter 4).

The Research Problems

The study was designed to investigate the following specific research problems:

- To ascertain whether male and female engineers differ in terms of level of job involvement
- To ascertain whether male and female engineers differ in terms of career anchor scores
- To ascertain whether different variables are associated with high job involvement for male, vis-a-vis female engineers.
- To ascertain whether level of job involvement of engineers can be predicted by means of career anchor scores, and whether there are gender differences in the strength of this prediction.

Method

The basic method used was the analytical survey method. Leedy (1985) describes this method as one where quantitative data are taken and analysed by means of appropriate statistical tools for the purpose of inferring certain meanings hidden within the data.

The Sample

The relative lack of female engineers, as compared to the number of male engineers, presented a challenge in terms of obtaining a sufficient number of females to answer the research questions. This reality gave rise to differences in sampling procedure for females as compared to males, and overall, the total sample was one of convenience.

The females in the sample were respondents to questionnaires mailed to the entire population of female engineers who are registered with one or other of the professional engineering institutes in South Africa. A total of 217 questionnaires were mailed to female engineers and 58 were returned, which is a response rate of 27%.

The male engineers in the sample were drawn from a number of sources: An advertisement was placed in one edition of each of the journals of professional engineering institutes in South Africa, requesting engineers to contact the researcher by post or telephone if they were interested in participating in the

research. In addition, 200 questionnaires were sent to a random sample of male engineers from two identified South African organisations; a large consulting practice of civil engineers and a major chemical manufacturer.

With respect to the latter organisation, all the various locations of the company countrywide, were included. A total of 200 questionnaires were sent to male engineers, of which 67 were returned, which is a response rate of 30%. An overview of the total sample is presented in Table 1.

With respect to both male and female subjects, the two inventories and the biographical questionnaire (to be described in more detail hereunder), were mailed, together with a covering letter explaining the purpose of the study. A self-addressed envelope was also included, and respondents were asked to send their names and addresses to the researcher under separate cover if they wanted to receive a summary of the overall study in due course.

The Instruments

Job Involvement Scale

Job involvement was measured with the original 20-item job involvement scale developed by Lodahl and Kejner (1965). Items on this scale were based on a 5-point Likert scale (1 = strongly

Table 1

Distribution of Sample across Engineering Branch

Engineering Branch	Males	Females	Total
Chemical	19	31	50
Electrical	12	0	12
Industrial	5	3	8
Mechanical	10	1	11
Civil	17	19	36
Metallurgical	3	4	7
Other	1	0	1
Total	67	58	125

disagree to 5 = strongly agree) and items were linearly summed to compute scale scores.

The main reason for the choice of the above scale is that it has been extensively used, in both the original as well as in shortened forms. Accordingly, it is felt that comparisons between the results from the present study and previous research are thereby facilitated. Internal consistency of the instrument has been found to vary from ,62 to ,93 (Blau, 1985).

Biographic Questionnaire

An appropriate biographic questionnaire was devised (Appendix 1). The items in this questionnaire were supplied by the range of biographic factors that previous research studies into job involvement have investigated. Table 2 indicates which previous research studies have investigated the biographic variables that were included in the questionnaire for this study.

The Career Anchor Inventory

Schein's (1982) Career Anchor Inventory was used. This version measures a range of nine career anchors, namely:-

- * technical/functional competence
- * managerial competence
- * autonomy
- * entrepreneurship

Table 2

Previous Research on Biographic Variables and Job Involvement

Biographic Variable	Studies
Age	Knoop (1986); Lodahl and Kejner (1965); Rabinowitz and Hall (1977) - review article
Marital Status	Frone and Rice (1987); Knoop (1986)
Sex	Graddick and Farr (1983); Knoop (1986); Lodahl and Kejner (1965); Rabinowitz and Hall (1977)
Number of Children	Frone and Rice (1987); Graddick and Farr (1983)
Employer Type	Boshoff, Kaplan and Kellerman (1988); McKelvey and Sekaran (1977)
Tenure	Lorence and Mortimer (1985); McKelvey and Sekaran (1977); Rabinowitz and Hall (1977)
Job Level / Type	McKelvey and Sekaran (1977)

- * variety
- * identification
- * service
- * security (tenure)
- * security (geographical)

DeLong (1982) performed a factor analysis on data from an inventory including items measuring these anchors, on a sample of 1 224 male business school graduates. Nine factors, corresponding to these anchors were identified. Test-retest reliability coefficients of between ,83 and ,91 were found for the nine factors (De Long, 1982).

In the present study, items were based on a 7 point Likert scale (1 = **strongly disagree** to 7 = **strongly agree**) and, as with the job involvement inventory, responses were linearly summed to compute scale scores.

CHAPTER 4

RESULTS

This chapter is divided into a number of sections. Firstly, the sample will be described in terms of biographic features. Thereafter, an overall statement regarding the findings will be given. Finally, detailed results found with respect to the different research problems will be reported.

The Sample : Biographic Features

Tables 3 through 5 describe the sample in terms of biographic features. Some of the noteworthy features of the sample are: The age profile of the sample in terms of gender, is very similar (\bar{X} for males = 31,1; \bar{X} for females = 30,9). For both males and females, there were more married people than single people, although this was more marked in the case of males. Almost as many males had children as did not. For females however, twice as many had children as did not.

The male sample was predominantly English speaking, while the female sample was more balanced between English and Afrikaans speakers.

As far as employee type was concerned, the female sample was more evenly distributed amongst the various categories. For both genders, however, most people were employed by manufacturing concerns, followed by consulting firms for males and the public service for females.

Table 3

Biographic Features of Sample

Variable	Frequency	
	Males ^a	Females ^b
Age		
21 - 30	39	35
31 - 40	25	17
41+	3	6
\bar{X}	31,1	30,9

Marital Status		
Single	18	25
Married	49	33

Children		
Yes	32	39
No	35	19

Language		
English	58	35
Afrikaans	9	23

^a \bar{n} = 67

^b \bar{n} = 58

Table 4

Description of Sample in terms of Employer Type

Variable	Males	Females	Total
Type of Employer			
Academic/Research	4	12	16
Public service/para-statal	2	13	15
Consulting	16	12	28
Manufacturing	39	18	57
Mining	2	2	4
Other	4	1	5

Table 5

Description of Sample in terms of Current Position

Position	Males	Females	Total
Managers			
Senior Manager ^a	4	3	7
Section/Regional Manager	14	6	20
Junior Manager	8	3	11
Total	36	12	38
Non Managers			
Senior Engineer	15	14	29
Engineer	11	13	24
Junior Engineer	12	15	27
Other ^b	3	4	7
Total	41	46	87

^a includes people who own and run their own business

^b for example, university lecturers

38,8% of the males were in management positions, compared to 26% of the females. Of the people in non-management positions, 36,5% of the males were senior engineers, while 30% of the females held this kind of position.

The Results

To ascertain whether male and female engineers differed in terms of level of job involvement, the means and standard deviations with respect to scores on the Lodahl and Kejner (1965) job involvement inventory were calculated. F tests to determine significant differences between the means were then performed. As can be seen from Table 6, no significant gender differences in level of job involvement were found.

Identical statistical procedures were then carried out on career anchor scores, in order to determine whether male and female engineers differ in terms of career anchors. As can be seen from Table 6, a number of significant differences were indicated. For males, the managerial and entrepreneurship anchors were significantly stronger than was the case for females; the technical/functional and security (geographical) career anchors were significantly more potent for females than males.

To determine which variables are associated with high job involvement for male vis-a-vis female engineers, a table of intercorrelations for all variables was drawn up, using the Pearson correlation coefficient. A summary of the obtained

Table 6

Means and Standard Deviations for Job Involvement and Career Anchors

Variable	Females		Males		F
	M	SD	M	SD	
Job Involvement	69,72	8,00	71,87	8,18	2,18
Career Anchors					
Technical/Functional	16,81	5,42	14,44	5,13	6,26*
Managerial	21,31	5,31	24,00	3,84	10,72**
Autonomy	20,17	4,48	19,31	4,72	1,08
Service	22,05	4,22	21,39	3,66	,89
Identification	16,22	4,36	17,71	5,27	2,92
Variety	23,58	4,18	23,91	3,53	,23
Entrepreneurship	18,95	5,01	21,04	4,91	5,56*
Security (Tenure)	18,02	6,40	17,16	5,92	,62
Security (Geographical)	18,39	7,73	14,10	6,96	10,63**

* $p < ,05$

** $p < ,01$

correlations is shown in Table 7. The most striking features are the following: Neither age nor years of experience was significantly correlated with job involvement, for either males or females. For females, the only significant relationship found was that between job involvement and security (tenure) ($r = -.30$, $p < .05$)

For males, on the other hand, significant relationships were found between job involvement and six of the nine career anchors, three at the .01 level, namely managerial, service and security (tenure), three at the 0.5 level, namely identification, variety and autonomy. All of these correlations were positive, except for one, i.e. autonomy. Outstanding amongst these correlations is that between job involvement and the managerial career anchor ($r = .47$; $r^2 = .22$; $100r^2 = 21.1\%$ common variance). Strong relationships were also obtained for job involvement and job security ($r = .34$; $r^2 = .116$; $100r^2 = 11.56\%$ common variance) and job involvement and service ($r = .31$; $r^2 = .096$; $100r^2 = 9.61\%$ common variance).

To investigate the effect of gender on the relationship between job involvement and biographic variables, one-way analysis of variance using the General Linear Models procedure, from the "SAS" programme were carried out on males and females on the following variables:

Table 7

Correlates with Job Involvement

Variables	Females	Males
Age	- .08	.007
Years of Experience	- .09	- .04
Career Anchors		
Managerial	.17	.47**
Autonomy	- .11	- .27*
Service	- .10	.31**
Identification	- .19	.28*
Variety	.18	.29*
Entrepreneurship	.18	.13
Technical/Functional	- .08	- .11
Security (Tenure)	- .30*	.34**
Security (Geographical)	- .16	- .17

* $p < .05$ ** $p < .01$

- * Age
- * Language
- * Marital status
- * Children

As can be seen from Table 8, one significant difference was obtained, with respect to marital status. Thus, it seems that for this particular sample of engineers, gender has a moderating influence on job involvement only with respect to marital status and this applied to males only. That is, married men were more likely to be job involved than were their single counterparts. The results of the present study do not support the notion that a married woman is less interested in her job than is a single woman, and that this is exacerbated when she has children.

The fourth research question was concerned with the prediction of level of job involvement by means of career anchor scores. A Stepwise Multiple Regression Analysis was performed, with a significance level of .15 set for the entry of variables into the model. The analysis was performed separately for males and females.

For females it was clear from the results reported in Table 7, that no individual career anchor predicted job involvement to any great extent. (The common variance between job involvement and security (tenure), which was the only significant correlation found, was only 9%). From the results of the multiple regression,

Table 8

Gender as a Moderator in the Relationship Between
Biographic Factors and Job Development

Variable	Females		Males	
	F	df	F	df
Marital Status	1,00	(1,56)	5,72*	(1,65)
Age	,23	(2,55)	,97	(2,55)
Children	1,98	(1,56)	2,21	(1,65)
Language Group	3,22	(1,56)	,63	(1,65)

* $p < .05$

it was found that a combination of predictions did not give a significantly better prediction of job involvement scores. Only one variable, security (tenure), was found to be a significant predictor and this accounted for only 8,8% of the variance on job involvement ($R^2 = 0,088$ F (Step) = 5,39 $p < .05$)

The results for males were quite different. From Table 9 it can be seen that 39,9% of the variance in job involvement was predicted by a combination of four of the career anchors measured: managerial, security (tenure), variety and service. Particularly noteworthy is the 21,8% of the variance predicted by the managerial anchor alone.

In summary, the results of the present study found some similar relationships between job involvement and various biographic variables that have been found by previous research on other samples. No significant gender differences in level of job involvement were found. Being married and having children did not seem to affect the level of female job involvement, although, somewhat surprisingly, this was not the case for the male engineers.

Several significant gender differences in the strength of career anchors were found, as were gender differences in the prediction of job involvement by career anchor scores. Career anchor scores were found to be better predictors of job involvement for male engineers than for female engineers.

Table 9

Stepwise Regression Results for Career Anchors
on Job Involvement for Males

Variable Entered	ΔR^2	R^2	F (Step)	df
Job Involvement				
Managerial	0,218	0,218	18,14*	(1,65)
Security (Tenure)	0,083	0,301	7,55*	(2,64)
Variety	0,070	0,371	7,01*	(3,63)
Service	0,028	0,399	2,87	(4,62)

* $p < .01$

CHAPTER 5

DISCUSSION

It appears that the research problems listed in the third chapter were answered in a relatively unequivocal way. Overall, the results indicated support for a social conditioning perspective of job involvement. That is, while no *a priori* differences in the level of job involvement between the male and female engineers in the sample were found, there were significant gender differences in the relative strength of the variables that influence and moderate job involvement.

Specifically, it was found that with respect to men, correlations with, and predictors of job involvement were found amongst the variables measured, whereas the same was not true with respect to women. Since a sizeable proportion of variance associated with job involvement for women could not be explained with the variables measured, it seems that an alternative or additional set of variables or interrelationships needs to be sought to understand the nature of women's job involvement. This is consistent with the view that career development issues are more complex for women than is the case for men (Nevill & Schlecker, 1988).

Job Involvement Scores

The finding of no gender differences in level of job involvement is consistent with previous research discussed earlier in this report. Given the fact that the present study is

the first South African study to investigate gender differences in job involvement it is worthwhile exploring a few tentative explanations for this finding. Further research would of course be needed to confirm the validity of these.

Firstly, it should be borne in mind that the present study measured job involvement and not career involvement or commitment. It is possible that if career involvement or commitment per se were measured, then gender differences might be found.

Secondly, and related to the above point, it is a tautology to state that the present study was concerned with the job involvement of male and female engineers, who currently have jobs in which to be involved. Although statistics were not reported in this study, it is common cause that many women do leave the labour market, some albeit only temporarily, in order to raise a family. Thus, it could be that those women in the sample, especially the married mothers, were, by virtue of being in the labour market, job involved.

A third explanation of this finding relates to the issue of personal investment. Anyone, male or female, who has made a significant investment of time, money and effort in preparing themselves for a profession, will be concerned with reaping return on that investment. A major way of doing this is of course to become highly involved in one's job (Graddick & Farr, 1983).

Finally, it is possible that women who enter the engineering profession, which is still very much male dominated, have what van Rooyen (1981) refers to as a masculine or androgynous sex role identity. As was discussed in the literature review, these women were found to be significantly more interested in their jobs and careers than were feminine sex role identity women. It is therefore possible that the lack of difference in level of job involvement between the males and females in the present study arose from their similarity in sex role identity. Since sex role identity was not measured, this explanation must however, be seen as speculative.

Career Anchor Scores

From the strength of the technical/functional anchor, it seems that females in the sample identified more with the professional image of the engineer, than did the males. The males' occupational self-concept lay strongly in the area of management and entrepreneurship. For males, the technical/functional anchor was the second weakest, after security (geographical). This pattern of career anchors for the males in the present study is consistent with that found for engineers by Boshoff, Kaplan and Kellerman, (1988). In the latter study, only one of the 178 engineers in the sample, was female.

If there were significantly more male than female managers in the sample used in the present study, this could partially explain the gender difference in the strength of the managerial

career anchor. Although this was indeed the case, 26 male versus 12 female managers, (See Table 5), it is suggested that this is insufficient in itself to explain the result.

In addition, it is suggested that the difference in dominant career anchor between males and females is based on gender based differences in expectations and aspirations. In other words, male engineers have a greater expectation of becoming managers and entrepreneurs than do females. The question arises, what is the reason for this expectation?

This issue was however not addressed empirically in the study. The explanation that is suggested below is therefore speculative.

A social conditioning explanation is proposed; namely, that male engineers see those who have gone before them in their organisations progress, in some cases very rapidly, into and through the management ranks. They have also seen men move out of the organisation into their own businesses. Female engineers, on the other hand have seen neither of the above.

Female engineers may be living out the stereotypes bestowed on them by those in power in organisations; they also do not have the benefit of role models who have gone before them as managers or entrepreneurs. This explanation is supported by Schein's (1978) idea that career anchors develop as a result of early and

mid-career interactions between the individual and the organisation. That is, managerial and entrepreneurship anchors are less likely to develop if a person's experience of these roles is limited or non-existent.

The other career anchor where significant gender differences were found was for security (geographical), with females having a stronger geographical anchor than was the case for males. Two possible, and not mutually exclusive explanations of this finding are firstly, that this reflects the social norm that a woman's career is or will become subservient to that of her male partner. Secondly, that since women do not have, in the main, the expectation of advancement to managerial ranks, they do not see themselves as having to, or wanting to, change location for the sake of career advancement.

This finding tends to support the notion put forward by Chusmir (1982) that family circumstances, (and in particular, the attitudes of the husband) and degree of sex role conflict are important issues for a working woman. However, the present study also indicates that the impact of these issues may not necessarily be evidenced in lower job involvement, as Chusmir's (1982) model would predict.

No significant differences in respect of five out of the nine career anchors were found, that is : autonomy, identification, security (tenure), service and variety. Thus it

appears that there existed a fair degree of commonality between males and females as to the aspects of work and jobs that are important (or not important). Jobs that provide a constant source of challenge or the opportunity to make an impact in respect of a cause or issue seem to be important to engineers, irrespective of gender. The opportunity to work unencumbered by structures and rules is of moderate importance, whilst neither males nor females in the sample tended to seek out situations offering job security or high status.

As a general comment, it can be said that this reinforces the point that while identifying differences between groups is often important from both a theoretical, as well as a pragmatic point of view, overstressing these to the point where the equally important possible similarities are overlooked, can be counter-productive.

Correlation of Biographic Variables with Job Involvement

Considering now the results found with respect to the relationships between the range of personal and situational factors measured on the one hand, and job involvement on the other, a similar picture emerges: That is, there are both similarities and differences with regard to gender.

From the literature on job involvement, one would expect certain correlations in the same direction for both men and women. For example, age, tenure, marital status, locus of

control (Rabinowitz & Hall, 1977; Knoop, 1986).

The question arises, why were the more commonly found relationships not found for either gender? Also, why was gender not found to be a significant moderating variable between job involvement and the variables of marital status and children?

With regard to the first question, two possibilities can be put forward. The first is a statistical one: That is, that the correlations were limited because of the restricted range of the variables of age and years of experience. As has been mentioned earlier, the mean age of the sample was 31 years, with a standard deviation of 6,9. The kurtosis was 2,84, indicating that the age distribution was biased towards the lower end of the range.

The second possibility explaining the lack of a relationship relates to the nature or shape of the relationship between job involvement and organisational tenure. The Wagner, Ferris, Fandt and Wayne (1987) study found that this relationship is initially low, and reaches a peak between three to nine years.

In the present study, although the mean age of the subjects was low, ($\bar{X} = 31,9$) the range of years of experience was large, that is, from 1 to 33 years. In addition, it is of course possible that within the total years experience of any one individual, a number of job changes could have been made with corresponding periods of entry and lower levels of job

involvement for that period of time. The present study did not measure length of time in **present** job. The results reported for the years of experience - job involvement relationship could therefore have been confounded by the phenomenon described by Wagner et al (1987).

With regard to the second question posed above, the issue is, why does neither being married nor having children affect the job involvement of the women, whereas being married did for the men in the sample? These findings are noteworthy since they are contrary to conventional wisdom. They are however consistent with the Graddick and Farr (1983) study, where it was suggested that even though women may carry a heavy burden in terms of parenting duties in addition to work duties, this does not necessarily manifest in lower job involvement (Graddick & Farr, 1983).

For the married men in the sample, being married gave rise to higher job involvement. There are two possible explanations for this: Firstly, that being married and supporting a family gives a man a good reason to be involved with his job (witness the strength of the job security - job involvement relationship); Secondly, that, in the case of men whose wives did not work, they have a support system that allows them to be job involved. It can be speculated that single men have both the need and the opportunity to explore and become involved in activities other than their work.

Career Anchors and Job Involvement

Overall, the results found with respect to the relationship between career anchors and job involvement provide a measure of support for McKelvey and Sekaran's (1977) type theory of job involvement. This theory suggests that career based factors condition the affects of personal and cultural factors on job involvement, through the establishment of ego identity types.

Career orientation (or career anchor as measured in the present study) is one such aspect of ego identity type. Others are preferred job type and personality type. For high job involvement to occur, the work setting must be appropriate for the individual's job preference, personality type and career orientation.

The finding that career anchors correlate with, and predict job involvement for male engineers, but not female engineers, suggests that career orientation is important in understanding the job involvement of male engineers, supporting McKelvey and Sekaran's (1977) type theory, whereas the same cannot be said for female engineers. This is of course not to say that the type theory has no validity for females, since it could be that other aspects of ego identity type, such as personality type, are more important for understanding the job involvement of females, than that of males. Only a study specifically designed to test type theory comprehensively could confirm this notion.

The finding that a large portion of the job involvement variance for men was explained by four career anchors should however, be interpreted with caution until subsequent similar research studies provide more information. This is reinforced by the inconsistency between the results of the present study and that of Boshoff, Kaplan and Kellerman (1988), who found that while career anchors were useful predictors of job involvement for 13 other professions, the engineering profession was outside this pattern.

Notwithstanding the need for cautious interpretation however, a possible explanation can be suggested for the finding that career anchors are related to the job involvement of male engineers. Type theory (McKelvey & Sekaran, 1977) would suggest that where high job involvement is occurring, this is as a result of the work situations in which the male engineers are operating being compatible with their career anchors. The career anchors that are particularly strongly associated with job involvement are: managerial competence, security (tenure), variety and service.

A possible interpretation of the finding is therefore that the degree to which the work environment provides opportunities that are compatible with these career anchors is significant in determining job involvement of the male engineers in the sample.

The same is not true for the female engineers in the sample. This seems to imply that the match of career anchors to work situation characteristics is not a factor that influences the job involvement of these women. The present study was not helpful in identifying those factors which are important in understanding the job involvement of women; Using McKelvey and Sekaran's (1977) theory, it is possible that personality type may be more significant - this would have to be tested in future research. An additional line of enquiry would be the impact of family circumstances as defined by Chusmir (1982). Other issues that could be of relevance in shaping female job involvement and career anchors include the manner in which females deal with issues such as role conflict and stereotyping.

Both personality factors and family circumstance factors could, for example, be useful in explaining the only significant relationship that was found between career anchors and job involvement for women: that between security (tenure) and job involvement ($r = .30$, $p < .05$). It was possible that highly job involved women have a degree of self confidence born out of "having made it" in difficult circumstances to the extent that job security is neither a practical nor a psychological issue. Alternatively, or in addition, it is submitted that with respect to married women, this finding would be expected if they perceived that their husbands would provide for them. These women would therefore not look to their jobs to provide security, but rather, to their husbands.

Implications and Recommendations

The nature and extent of the skills shortage amongst managerial and professional categories was discussed in the introduction. The findings of the present study suggest some implications in this area. Firstly, the relative dominance of the managerial career anchor over others for males, as well as in relation to females, and the relative lack of the technical/functional anchor for both genders, prompts the question, "who is going to do the engineering?" This in itself should be impetus to broaden the base of potential engineers. There are also career management implications, which will be discussed later.

With respect to the development of managers for the future, it seems a reasonable assumption to make that at least some, but not all members of both genders have the capability and potential to be managers. What is disturbing from the present findings is that most males are aspirant managers, and that aspirant managers are represented more by males than by females. This implies that the best possible use is not being made of management potential available from both genders, and that the quality of managers will be diminished by the extent to which engineers whose talents really lie more in the technical area are promoted into management positions.

Possible organisational strategies for dealing, in the short term, with this and some of the other issues raised during the discussion include:

- * Development of technical or specialist career ladders for engineers so that they do not perceive that the only promotional route is via management;
- * More effective career counselling for both males and females for them to develop career aspirations and anchors that are realistic in terms of meeting their own and the organisation's needs.

A focus on issues such as job design and management style to which engineers are exposed is suggested, given the finding that engineers of both genders have a strong **variety** career anchor. In addition, in the light of the finding that males have a strong **autonomy** career anchor, the extent to which this can be accommodated in existing work could be assessed.

A caveat should be noted with respect to human resource strategy. Although there were some differences in career anchors between males and females, the conclusion that differential strategies are thereby implied, is not warranted. We know that a powerful influence on people's work attitude and behaviour is the way in which they are managed. The use of differential strategies would arguably further enhance existing differences, which may be dysfunctional for both the individual and the organisation.

Implications for Future Research

The basic aim of this study was to investigate the influences on male and female job involvement. To the extent that only some of the possible variables were measured, further research is needed. In particular, the measurement of variables such as sex role conflict experienced, supportiveness of spouse, satisfaction with work and family life should be measured in terms of their affects on job involvement, for both men and women.

Given the fact that very little of the variance in job involvement scores for women was explained, the need for investigation of further possible predictors of female job involvement in particular, is underscored. In terms of the Yammarino and Dubinsky (1988) model, it would be informative to investigate the relative effects of personal characteristics, job characteristics and the joint effects of both, for males and females separately.

In addition, the results of the study suggest other related areas where further research would be useful. One of these is the investigation of coping mechanisms used by women that enable them to maintain a high level of job involvement; another would be the longer term effects of such coping mechanisms. Studies comparing professional women who have left the labour market, either temporarily or permanently, with those who remain, given

the same family circumstances, would be useful in the further understanding of the process and outcome of female job involvement. One possible line of enquiry in this regard would be the extent to which degree of job satisfaction experienced by married women in particular explained their decision to remain in, or leave the labour market.

Finally, as was mentioned in the first chapter, the results of the study are not generalisable beyond the present sample; thus replications using samples from other occupational levels or areas and indeed, even amongst a more representative sample of engineers, are indicated.

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APPENDIX 1

PERSONAL DETAILS

1. Branch of Engineering

Chemical

Electrical

Industrial

Mechanical

Civil

Metallurgical

Other (Please specify)

.....

Any speciality within your particular branch?

Please Specify

2. Year of Qualification

--

University

.....

3. Current Age

--

4. Marital Status

Single	Married	Divorced	Widow
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5. Sex

Male	Female
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6. Number of Children

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7. Type of Employer

- Academic Institution
- Research Institution
- Public Service
- Para-Statal
- Consulting Firm
- Other (Please specify
Sector, e.g. mining,
manufacturing, etc.)

.....

8. Total number of years work experience

--

9. Present level in organisation:

- Senior Manager
- Section/Regional Manager
- Junior Manager
- Senior Manager
- Engineer/"Professional Officer"
- Junior Engineer

If you cannot classify your job in terms of the list above,
state your job title: